# Digital Data Management System (DDMS)

# Project Action Plan

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**Prepared by**

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# SECTION I - INTRODUCTION

The Nuclear Regulatory Commission (NRC) has defined requirements that reflect their vision for establishing and operating a courtroom with digital information retrieval, utilization, and display capabilities. The NRC will use its new courtroom while litigating the largest adjudicatory proceeding ever held in the United States. At the end of the congressional mandated three-year period for this adjudicatory proceeding, the NRC will have decided whether to approve a Department of Energy license application for constructing a high-level radioactive waste repository at Yucca Mountain, Nevada. While intended to support the high level waste (HLW) hearings, the intent is that the resources developed for the Digital Data Management System (DDMS) will be available for all other Atomic Safety and Licensing Board Panel (ASLBP) proceedings.

These circumstances give rise to the Commission's need for a DDMS equipped courtroom whose technology is simple to operate, reliable and fast. The remainder of this document describes, in detail, the planned project management approach for meeting the needs outlined above.

## *1.1 Background*

The U.S. Nuclear Regulatory Commission (NRC) has a requirement for establishing and operating a courtroom with digital information retrieval, utilization, and display capabilities in conjunction with anticipated licensing proceedings for a high-level radioactive waste repository at Yucca Mountain, Nevada. These capabilities also are expected to be available for use in other licensing proceedings conducted by the Atomic Safety and Licensing Board Panel (ASLBP) in the NRC's Rockville, Maryland facility. Additionally, it is envisioned that portable and remote capabilities would be used to support local hearings conducted across the United States.

The ASLBP is responsible for conducting the adjudicators' proceedings regarding the Department of Energy's (DOE) application for construction authorization for a High Level Waste (HLW) repository at Yucca Mountain, Nevada. The current estimated date for beginning evidentiary hearings is May 2005. The scope and nature of this proceeding dictate the essential need for efficient capture and management of the enormous volume of multimedia data that must be processed and displayed in a very short time frame for this hearing. The enormity of the HLW repository licensing hearing is evidenced by the number of documents that the Office of the Secretary (SECY) estimates will be part of the hearing docket at the completion of the proceeding. The SECY estimate of 50,000 documents is 300 times the volume associated with a typical ASLBP hearing and 24 times the volume of the largest hearing currently being conducted. In the current environment, ASLBP hearings are conducted using paper-based information and limited audio/visual (A/V) capabilities. This current approach clearly cannot support a hearing of the magnitude of the HLW repository licensing proceeding and cannot meet Commission rules established for the proceeding including the provision for online access to the SECY maintained electronic docket during the hearing. [Reference: 10 C.F.R. 2.1013(d)]

NRC has conducted a comprehensive analysis to examine alternative solutions, including the utility of its existing Agency-wide Document Access and Management System (ADAMS) (see http://www.nrc.gov/reading-rm/adams.html), for establishing an "electronic courtroom"/hearing room Digital Data Management System (DDMS) to fulfill this mission need. As part of this analysis, NRC has developed a vision of a DDMS that will be used in the Rockville hearing room and in a hearing room that will be established in the Las Vegas, Nevada area to conduct the majority of the proceedings. The system will enable the creation and use of an integrated, comprehensive digital record for the HLW repository licensing proceeding. Using information that is pre-filed electronically by hearing participants in the agency's ADAMS-based Electronic Hearing Docket (EHD), DDMS will record, store, and display the text and image of documents and other digital data presented in the hearing and permit access and retrieval of the entire documentary and video record of the proceeding in an electronic format. The system will allow counsel for the parties to bring prepared materials to the evidentiary hearing electronically and have it integrated and accessible concurrently with the record being presented in the hearing room. The record will be continually accessible by the presiding officer and the parties in the litigation. The DDMS will support hearing activities and information management during the pre-hearing, hearing, and post-hearing phases.

NRC has identified an aggressive schedule for providing this courtroom data and document management capability, from initial planning and coordination activities through delivery and maintenance of an operational system. This project is intended to deliver the required range of services in a four-phase project, with each phase separately authorized and funded. The first three phases of work are completed under this contract. The fourth phase, implementation of the Las Vegas capability, will be implemented at a later date.

## 1.2 Objectives

The major objective of the DDMS is to help the NRC meet the congressionally dictated three-year time requirement for the HLW repository licensing proceeding and to meet the regulatory requirement that there be online access to the HLW repository hearing docket during the hearing. Properly structured, the DDMS will support other ASLBP hearings as well. The DDMS is intended to achieve time and resource savings by improving the efficiency of this high profile HLW repository licensing hearing. The DDMS through its use of critical document and multimedia management functions eases the management of the anticipated large volume of electronic discovery and evidentiary information and is essential to the ASLBP in preparing timely decisions throughout the proceeding. It will also support the Office of General Counsel (OGC) and the Office of Nuclear Materials Safety and Safeguards (NMSS) staff in preparing for evidentiary proceedings and may be useful to Commissioners' staff in performing appellate review/oversight activities.

## 1.3 Scope

The DDMS is a critical component in ASLBP's plan to fulfill Congress' mandate to NRC to efficiently process the Yucca Mountain HLW application. DDMS will employ stable and best-of-breed information technologies that will provide the NRC community access to shared information and processes. The key to the success of the DDMS is the effectiveness of its user interface to facilitate savings of time spent conducting hearings. DDMS will enable authorized users to rapidly and easily access information on demand.

DDMS will initially deliver functionality for a feasibility proof of concept (POC) Pilot system (see Exhibit 1-1) rather than full Production Pilot capabilities. Task 1 will, however, address the design of the overall, fully operational Rockville component. The Task 1 POC Rockville component equipment will be used in implementing the full Production Pilot in Task 3 in order to meet the tight time constraints driven by the projected filing of the Department of Energy license in late 2004.

The planned methodology focuses on the use of rapid prototyping to validate the concept of the user interface. This is a critical set of requirements to both successfully capture and meet. PEC plans to include multiple reviews with judges & court administrative personnel to ensure the DDMS design is easy to use under the constraints of real-time courtroom conditions.

In terms of implementation, the planned approach centers on the use of best-of-breed commercial off-the-shelf (COTS) products. Many COTS products not only provide the maximum amount of required functionality out of the box, but also the modularity and flexibility needed to customize the integrated system to best meet the needs of the ASLBP.

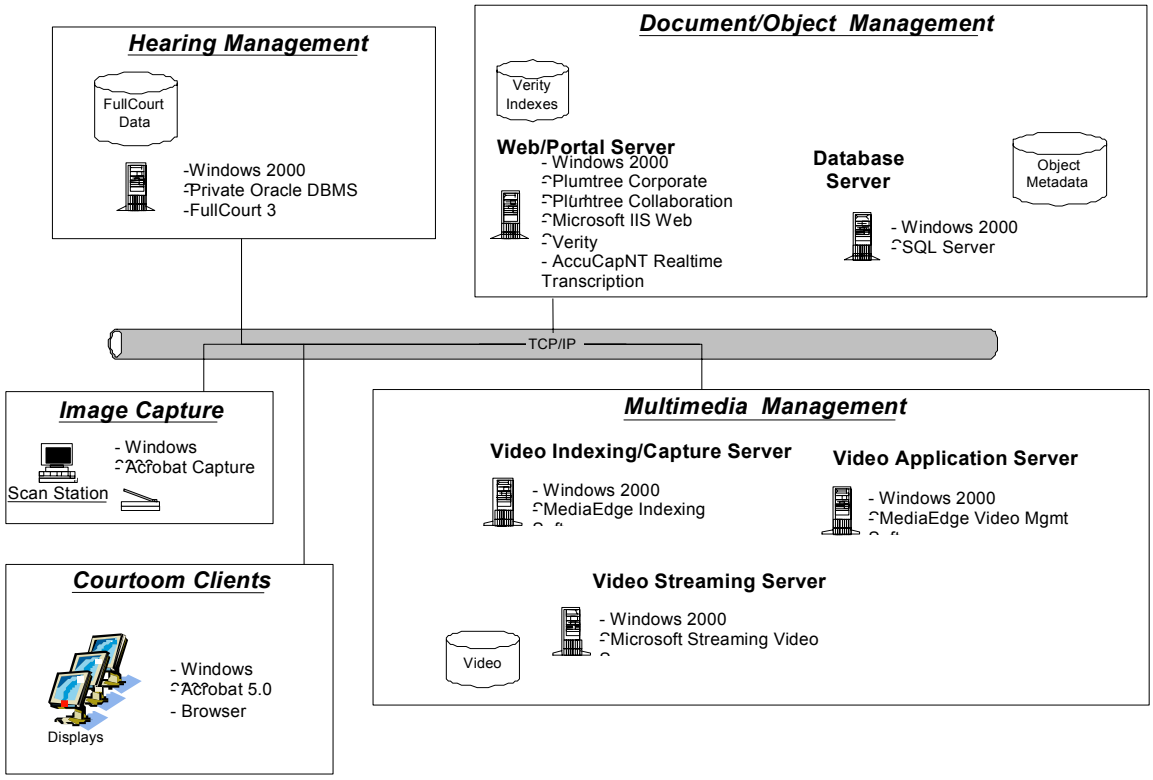



**Exhibit 1-1: DDMS Architecture for the POC System**

## 1.4 Assumptions

- Requirements collection meetings and interviews will be conducted on-site at NRC Rockville facilities.
- Initial integration and development of the POC system will be performed at PEC facilities. At the conclusion of internal testing, an evaluation POC system will be configured at NRC in Rockville, tested and readied for evaluation testing.
- All meetings will be held at NRC or PEC team facilities.
- The DDMS will capture information from EHD and distribute information to ADAMS via the Data Processing Center (DPC). The reliability and availability of DDMS is thus dependent on the continuing availability and stability of the interfaces with these systems.

## 1.5 Applicable References

- Technical Documents, Plans, and Standards:
  - Workforce Investment Act of 1998, Rehabilitation Action Amendments of 1998, Section 508, Implementation.
- System Development and Life-Cycle Management Methodology (SDLCM), Handbook, Version 2.2, December 1999 (in effect at the time of contract award)
- "Nuclear Regulatory Commission Hearing Room Digital Data Management System Study, Aspen Systems, July 26, 2001.
- Digital Data Management System Statement of Work dated March 15, 2002 and amended April 12, 2002.
- PEC "Digital Data Management System (DDMS) Updated Technical Proposal" dated June 18, 2002.

## 1.6 Document Organization

Section 1, this section serves as the introduction to this Project Action Plan (PAP) describing the problem to be solved, the objectives of the DDMS and a brief overview of the proposed solution.

Section 2 contains the detail of the Program Management Plan including the planned work breakdown structure (WBS), detailed plans for subtasks and activities, the proposed schedule, team organization and DDMS interfaces to external systems. In addition, this section describes the plans for risk management and quality assurance activities such as reviews and configuration management. Finally, it discusses the project controls that will be used to manage the labor effort levels and costs along with plans for meetings and communications.

Section 3 contains the Software Development Plan.

This document will be maintained through monthly updates, as required, as described in Section 2.6.

## 1.7 Definition of Terms

| | |
|---|---|
| ADAMS | Agency-wide Documents Access Management System |
| ASLBP | Atomic Safety and Licensing Board Panel |
| ASP | Active Server Pages |
| C.F.R. | Code of Federal Regulations |
| CD | Computer Disk |
| CM | Configuration Management |
| COTS | Commercial off-the-shelf |
| DOE | Department of Energy |
| DPC | Data Processing Center |
| EHD | Electronic Hearing Docket |
| EIE | Electronic Information Exchange |
| FIPS | Federal Information Processing System |
| GOTS | Government Off-The-Shelf |
| HLW | High Level Waste |
| HTML | Hyper Text Markup Language |
| HTTP | Hyper Text Transfer Protocol |
| IP | Internet Protocol |
| MTA | Mail Transfer Agents |
| MUA | Mail User Agents |
| NOC | Network Operations Center |
| NRC | Nuclear Regulatory Commission |
| OCIO | Office of the Chief Information Officer |
| OGC | Office of General Counsel |

| | |
|---|---|
| PAP | Project Action Plan |
| PDAD | Project Definition and Analysis Document |
| PDF | Portable Document Format |
| PMR | Program Management Report |
| POC | Proof of Concept |
| QA | Quality Assurance |
| RAD | Rapid Application Development |
| SDLCM | System Development and Life-Cycle Management |
| SECY | Secretary of the NRC |
| SMTP | Simple Mail Transport Protocol |
| SOC | System Operations Concept |
| SOW | Statement of Work |
| SQL | Structured Query Language |
| SRS | System Requirements Specification |
| TCP/IP | Transmission Control Protocol/Intenet Protocol |
| WBS | Work Breakdown Structure |
| WWW | World Wide Web or the Web |
| XML | Extensible Markup Language |

# SECTION 2 - PROJECT MANAGEMENT PLAN

## 2.1 Project Definition

### *2.1.1 Project Deliverables*

The proposed Project Deliverables will meet the requirements of the life cycle development guidelines contained in NRC's SDLCM. Exhibit 2-1 lists the deliverables and the preliminary baseline scheduled delivery dates.

| Deliverable | Baseline Date |
|---|---|
| ***Subtask 1.1 - Kickoff Meeting and Project Management*** | |
| Kickoff Briefing | 08/28/02 |
| Preliminary Project Action Plan | 09/12/02 |
| Initial PAP | 10/09/02 |
| Draft Project Definition and Analysis Document | 10/05/02 |
| PDAD | 10/16/02 |
| ***Subtask 1.2 — POC Requirements and Design*** | |
| *POC Requirements Matrix* | 11/18/02 |
| *Security and Risk Assessment Plans for POC to NRC for Review* | 11/13/02 |
| *Contingency Plan for POC to NRC for Review* | 11/20/02 |
| *Security & Risk Assessment Plans* | 11/26/02 |
| *Contingency Plan* | 12/05/02 |
| *POC Requirements and Design Document for NRC Review (inc. LDD, PDD, TIP)* | 1/7/03 |
| *POC System Design Review* | 1/21/03 |
| ***Subtask 1.3 — Develop POC*** | |
| POC Evaluation Test Plan for NRC Review | 5/5/03 |
| Final POC Evaluation Test Plan | 5/19/03 |
| Operating POC System at NRC Ready for Testing | 6/10/03 |
| ***Subtask 1.4 - Production System Requirements/Design*** | |
| Draft Production System Requirements and Design Document | 5/20/03 |
| Production System Design Review | 5/29/03 |
| Final Production System Requirements and Design Document | 6/6/03 |
| Security Plan for Production System to NRC for Review | 6/27/03 |
| Contingency Plan to NRC for Review | 7/14/03 |
| ***Subtask 1.5 - POC Evaluation*** | |
| POC System Evaluation Completed to NRC for Review | 7/9/03 |
| Draft Recommendation Revision for Implementation Report | 7/23/03 |
| Finalized Recommendation Revision for Implementation Report (inc.) Software & System Test Results Report) | 8/4/03 |
| Software Engineering Notebook | 7/25/03 |

**Exhibit 2-1: List Task 1 DDMS Deliverables**

### *2.1.2 Management Approach*

The project management methodology to be used on the DDMS project is based on five fundamental tenets to ensure that the project objectives are achieved on-schedule and within budget, as follows.

- **Single Point of Accountability.** Richard Schutz, the PEC DDMS Project Manager, will manage all aspects of the project. He will be the single point of contact for the government for all project activities. The single-point accountability of the Project Manager is an important component of the management approach and will ensure that PEC applies a consistent set of management practices across the DDMS Project. Mr. Schutz and Mr. Roy Carter, ESD Vice President, will have the authority to make the resource commitments necessary to complete all work. PEC executive management and staff will support Mr. Schutz.

- **Frequent and Open Communication.** PEC will establish and maintain open and frequent coordination with the NRC. The DDMS Project Manager, Pat Smith, will facilitate examination of business, technical, and management issues, and anticipate needs as they relate to the DDMS Project. PEC will provide Activity Reports at the weekly Project Status Meetings, as well as monthly status reports, which are detailed in Section 2.6 of this document. Our proactive approach to communication and coordination will provide the lead-time necessary to coordinate the efforts of NRC and PEC project staffs.

- **Frequent Internal Reviews.** PEC will conduct periodic internal reviews to assess status and progress, develop solutions to problems as they occur, and attempt to eliminate or minimize the impact of anticipated future problems. Senior management will actively participate in the review of on-going projects activities and provide valuable insight and guidance to project team. The PEC Project Manager has at his disposal a cadre of experienced managers and technical experts with specific focused knowledge who can provide assistance and ensure timely delivery of all contract items.

- **Detailed Project Planning and Execution.** PEC will ensure timely completion of deliverable items by understanding requirements completely, planning the work activities and duration of each, assigning the appropriate mix of personnel with the required skills, and obtaining the personal commitment of each individual on the task.

- **Project Monitoring and Tracking.** PEC will follow the NRC's SDLCM while developing the DDMS. PEC will utilize Microsoft Project as the major planning and scheduling tool. The detailed plan identifies all planned activities and the

target delivery dates of interim as well as final deliverables for use in tracking project progress. PEC will use an earned value methodology for evaluating progress and for reporting project status. The criteria are 0% prior to the start of an activity, 50% once a task has begun and 100% when the activity is completed.

### *2.1.3 Monthly Reports*

PEC will create and deliver to the NRC monthly reports that summarize the status of the project. These reports will focus on describing the progress of the project in terms of work accomplished against the planned efforts to date. In addition, we will report on the labor hour expenditures in relation to the budgeted labor hours to date. This will also include the actual expenditures as compared to budgeted expenditures. We will report these project metrics on a month-by-month basis as well as on a cumulative basis. In addition, the monthly report will contain a summary of work performed during the period, statistics and plans for the next reporting period, a discussion of current operational considerations, and the status of expenditures.

PEC will update the Project Management Plan on a monthly basis, as necessary. This will include such items as updates to the Work Breakdown Structure, Project Schedule, and financial metrics.

### *2.1.4 Technical Approach*

The DDMS approach is built around four core COTS products that meet the diverse set of DDMS functional requirements:

- FullCourt - court case and hearing management.
- Collaboration Server - document/object collaboration.
- Corporate Portal - user interface management and document/object management.
- SQL Server - relational database management system.

These tools, in turn, are the cornerstones of the four functional blocks in the DDMS: document, multimedia, court case, and hearing management. PEC will also integrate other industry accepted mainstream tools into the DDMS solution:

- Adobe Acrobat display functionality including annotation definition and display capability.
- MediaEdge Video Indexing software to create video metadata
- MediaEdge Video Application Server to manage the video metadata.
- Verity K2 Spider for indexing DDMS documents and objects.
- Microsoft's Streaming Video Server for reliable streaming video delivery.

- Advantage Software's AccuCapNT Real-time Transcription software for court reporting in the hearing room.
- Telestream real time transcript display software
- Crystal Reports for simple ad hoc reporting.

The roles of these COTS products and other software elements are described below:

*Primary Software Packages*

- *Fullcourt*. This product from Justice Systems, Inc. provides most of the and hearing management functions required by DDMS. This product may be provided, if appropriate, to allow ASLBP personnel hands-on use of a court case management to better define the DDMS hearing management functional needs. It is expected, that some source code modifications will be required to adapt FullCourt for use in the NRC's administrative hearing environment. Alternatively, if applicable, a Government Off-The-Shelf (GOTS) package may be used as the baseline hearing management product on which enhancements will be made.

- *Collaboration Server*. The Collaboration Server from Plumtree Software, Inc. allows DDMS users to collaborate on projects setting schedules, sharing "documents" (including via check in/checkout), and exchanging ideas. Designed for large law firms, the product integrates with the Plumtree Corporate Portal to manage documents (including objects such as images, videos and audio files) of all kinds, organizing them into projects that can be controlled at the document, object, user, and group levels. Collaboration Server tracks revisions to documents and provides the ability to "rollback" to an earlier version. Additional capabilities include threaded discussions, "to do" lists, and associating schedules with each document. These information objects (threaded discussions, etc.) remain with the document.

- *Corporate Portal*. This Plumtree Software, Inc. product provides the underlying functionality needed to meet the document management and multimedia management requirements of DDMS, including full text search and retrieval. The portal integrates documents and objects into a simple, intuitive user interface. For example, the portal's search functions allow DDMS users to search hearing transcripts for specific words and play back the corresponding courtroom videos from the point where those words occur. The user interface will be designed to minimize the efforts of users to pull up documents of interest. Corporate Portal's integrated security features provide the overall security framework (user IDs and passwords in accordance with the NRC Directive 12.5) for controlling access within the DDMS.

- *Microsoft SQL Server*. The DDMS will be built around this widely used relational database management system. Collaboration Server and Corporate Portal will use

SQL Server to manage documents and objects, along with additional information ("metadata") required to store and retrieve video and audio files.

*Additional DDMS Tools*

- *Adobe Acrobat 5.0.* This package, running on all hearing room workstations, will allow all authorized parties to access previously stored documents. Acrobat provides a full range of image display and manipulation features including resizing, rotation, thumbnails, bookmarking, and annotation. Acrobat can define and enforce the functions allowed on each document. For example, the ability for users to make annotations on a particular document can be disabled. Acrobat 5.0 also supports the ability to digitally sign documents, if appropriate.

- *MediaEdge Video Indexing Software*. This software synchronizes the video from the hearing room with the transcript from the court reporter. It also creates "keyframes" that allow users to view individual video frames, select a particular scene and then begin streaming the courtroom video from that point.

- *MediaEdge Video Application Server*. The video application server contains the metadata about the video (i.e., time code, keyframes, date, hearing, etc), the time synchronized transcript and synchronized links to all evidence submitted during the hearing. The video application server appears as a portlet (a small application) within the Plumtree portal. This provides a simple interface for users to easily query the multimedia court record.

- *Verity K2 Spider.* This product "crawls" through the information managed by the Plumtree Collaboration Server and Corporate Portal and then creates searchable indexes for these products. Verity's product works with any indexable document format, including Microsoft Office, Adobe PDF, XML, Wordperfect and HTML documents.

- *Telestream.* This software converts ("transcodes") video "on the fly" to a low resolution format for viewing in a web browser. The use of transcoding frees the video server from storing multiple copies of the video files, each in a different streaming video format and quality.

- *Microsoft Streaming Video Server.* The streaming video server ensures reliable delivery of streaming video to the user. The streaming video server receives the transcoded video from the video server and provides reliable delivery to the user.

- *Advantage Software's AccuCapNT Real-time Transcription Software.* This package provides an easy to use interface that enables users to receive transcript text directly from a court reporter in real time, whether in the hearing room or remotely via the internet/intranet. The resulting real time transcript will be synchronized and merged with the live video from the hearing room to form the

official record of the proceeding. This product is currently being enhanced to provide web based transcript control that will allow any user, through the use of a browser to view the real time transcript stream. PEC is proposing to include this functionality in the Production DDMS Pilot delivered under Task 3. In addition, AccuCapNT delivers closed caption functionality.

- *Seagate Crystal Reports.* Crystal Reports will allow DDMS users to create complex customized reports, both ad hoc and predefined, which pull together data stored in DDMS databases. This supports general reporting requirements for those reports not already available in FullCourt and via the DDMS user interface.

## 2.2 Project Management Plan

The overall DDMS project consists of three Tasks implementing a phased approach that utilizes gating between the phases - that is, a "GO" decision is required at the conclusion of each Task before PEC will be authorized to proceed to the next task.

Task 1 will produce an overall DDMS design that addresses not only the Rockville Hearing room but also the requirements of a future Las Vegas Hearing Room. An initial design will focus on the POC. Once the POC design is completed and approved, a POC Pilot system will be developed for the Rockville Hearing Room. This culminates in the demonstration of the POC Pilot system that meets the detailed requirements developed and defined in advance of the POC development. In parallel to this POC system development, PEC will complete the requirements definition and design of the total Production DDMS System. PEC is proposing five major subtasks for Task 1. As summarized in Appendix A, the overall schedule for Task 1 spans approximately 10 months beginning in August of 2002 and extending into July of 2003. The details of our Task 1 project approach are described below.

Optional Task 2 offers activities that include the component engineering, installation and testing of new audio/visual components in the Rockville Hearing room. These activities will culminate in the Operations Assessment Demonstration that verifies that the provided audio/visual components meet the requirements as defined in the SOW.

Following the successful completion of Task 2, the installation and operation of new audio/visual component in the Rockville hearing room, and the issuance of a "GO" decision by NRC, PEC will begin Task 3. This will build upon the feasibility POC developed in Task 1 and incorporate the lessons learned from Task 1 and Task 2 to develop a totally integrated DDMS. These activities will culminate in the successful completion of the Mock HLW hearing. This is intended to verify the effectiveness of the completed integrated DDMS in addressing ASLBP's goals of reducing the time and burden of conducting hearings. Optional Task 3 will focus on designing and developing the final production system and moving the POC to a full-scale production pilot system.

The following program management plan addresses the activities for the awarded contract that encompasses Task 1 only.

### *2.2.1 Task 1 Work Breakdown*

The DDMS project for Task 1 will be managed according to the detailed schedule in Appendix A and the detailed work breakdown structure (WBS) contained in Appendix C. The following paragraphs define the methodology we will follow during the course of the specific activities listed in the schedule and culminating in the deliverables shown in the schedule.

***Subtask 1.1 – Kickoff Meeting and Project Management Planning***

The initial subtask begins with a kickoff meeting with the NRC DDMS project team. PEC will describe the project schedule and technical approach to ensure a mutual understanding of the project methodology and critical success factors. In this meeting PEC will introduce our proposed key staff, review the objectives of the project, the assumptions made, and summarize our planned approach. PEC then will solicit NRC's comments and suggestions in identifying any revision that should be made to our basic plans.

Based on the results of the kickoff meeting, PEC will prepare a Project Action Plan (PAP). In this plan, PEC will document our updated plans based on information gained during the contract negotiations and signing process. These include a detailed master project schedule and a detailed description of each of the activities to be performed. In addition PEC will include, among other topics, a list of key DDMS project personnel (both the PEC team and NRC team) a detailed staffing description and overall project chain of reporting and scheme that includes PEC and NRC points of coordination. PEC will also produce a Project Definition and Analysis Document (PDAD) that describes the topics indicated in the SDLCM. This includes the listing of the basic system and data requirements, an analysis of alternative system architectures and a brief description of the systems operations concept.

PEC plans to use the initial weeks of the project to review available documentation and bring our project team up to speed quickly on the existing NRC Adjudicatory environment and HLW requirements. At the commencement of this task, PEC will require the NRC to provide documentation on existing procedures, automated tools and systems, technology infrastructure, and manual processes/procedures (not already discussed in the Aspen document). Early review of this documentation will streamline the information gathering process and reduce the imposition on Government personnel to provide important background information to project staff. As part of the on-going management of the Project, each Tuesday PEC will provide weekly Activity Reports to NRC summarizing the activities and status of the project. These will be used as the basis for discussions at the weekly Wednesday status review meetings. In addition, PEC will develop and provide Project Management Plan updates, as required to reflect on-going changes to the project identified during the course of our weekly status meetings.

The deliverables created during the performance of this subtask are as follows:

- DDMS Project Kickoff Briefing
- Weekly Activity Report
- Project Action Plan

- Project Definition and Analysis Document
- Monthly Program Management Plan updates.

For all document deliverables, PEC will work closely with the appropriate NRC staff at the outset of our tasks to identify and review the form and content of our deliverables. PEC will continue to conduct subsequent interim discussions about the document content and document preparation status. PEC will attempt to meet with NRC prior to the deliverable due date to verbally preview the document and to collect any comments on the document at that point in time.

***Subtask 1.2 - POC Requirements and Design Subtask***

Following the completion of the Kickoff and Project Management Plan subtask, PEC will begin the POC Requirements and Design Subtask. In this subtask, specifically for the POC Pilot, PEC will clarify the requirements, and design the system. We will utilize requirements gathering and analysis tools described below.

PEC will gather and analyze existing NRC documentation describing the hearing process, the information technology environment, and security standards. Using this documentation, PEC will gain an initial understanding of the NRC operating environment and begin to clarify the existing functional and technical DDMS requirements. This will establish an initial framework allowing PEC to conduct more effective interviews.

PEC will identify and schedule interviews and meetings with the appropriate players in the ASLBP hearing process. These players include NRC judges, support staff, attorneys, and other external constituents. The interview process is a key data-gathering element for the requirements process. The interviews will be structured to help resolve the following critical issues:

1. Validate the existing functional requirements.
2. Identify, capture, and refine the most effective user interface controls and mechanisms communicated by the most critical DDMS users.
3. Define the data elements to include the what, where, and how of information flow, and how often the elements are being used in the DDMS. These are essential building blocks for an effective and secure information system.

The interview process is flexible and may comprise multiple sessions with select key personnel. These sessions will help PEC refine complex requirements and gain an in-depth understanding of the hearing environment. One innovation PEC offers is the use of mockups of the user interface allowing NRC users to evaluate the initial user interface mechanisms. This is an iterative process with the goal to refine the interface using feedback from the users. This iteration will be achieved by holding additional follow-up sessions with key system users to gain feedback on prior screen designs and layouts.

As each of the interviews are completed, PEC will review and evaluate the notes from the sessions and will identify where feedback either reinforces and clarifies existing requirements, or

suggest new ones. PEC will consolidate these comments into our master table of requirements, and revise the table as appropriate. In some cases, further clarification will be required and PEC will schedule additional interviews.

During the requirements gathering process, the list of POC functional requirements will become more detailed by providing sub elements of requirements, and more refined by eliminating duplicate requirements.

When the interview process is complete, PEC will summarize our findings, present an updated and refined list of functional requirements to NRC, and walk step-by-step through the list with NRC key personnel to gather final comments. PEC will then brief the NRC on the finalized requirements definition. Upon final revision of the requirements, PEC will deliver a copy of this POC Requirements Matrix for NRC staff sign-off and approval. This will establish the POC requirements baseline and signal the beginning of the POC design phase.

In parallel with the development of the final POC Requirements Matrix, PEC will conduct interviews and gather the information necessary to produce a Security and Risk Assessment Plan along with a Contingency Plan. These documents will be submitted to the NRC for review and once comments are received, they will be updated and delivered to the NRC as interim plans during the POC efforts. These documents will be finalized later in the project as part of Subtask, 1.4 once the POC evaluation testing is completed.

PEC designers will use our Requirements Traceability Matrix tool and will review all technical aspects of the design with the functional and business analysts who gathered the requirements, to ensure inclusion of all requirements in the design. The analysts will maintain the requirements traceability database and update it with design information to ensure all requirements trace to specific features of the design. Subsequently, PEC will review these design recommendations with ASLBP project personnel to ensure concurrence.

The requirements traceability matrix provides four important services to the project and forms a foundation for implementing configuration management:

- It provides a mechanism for developing real-time consensus of functional and data requirements, their content, and their relative importance.
- It maintains continuity in the requirements development process.
- It allows the project team to identify needed business process changes, thereby identifying where requirements cannot be met with current procedures.
- It allows requirements captured during the initial discussion of operational issues to be used later in the project to validate system processing during acceptance testing.

Based on the requirements and design produced in Subtask 1.2, PEC will configure the integration of the COTS components along with customized interfaces and database development.

PEC designers will begin with the identification of data capture requirements specific to DDMS. We will produce a relational data model along with a data flow diagram, subject to review by NRC technical representatives. The final database data model will be used to generate the DDMS SQL Server database.

PEC will also begin the design of the hearing management components. This task will consist of the definition of specific components required for NRC hearing management needs. We will develop a set of evaluation criteria to be used in assessing the capabilities of each GOTS product against the identified NRC hearing management requirements. Using these criteria, we will then evaluate the functionality of any identified GOTS packages (if one exists) against the required DDMS functionality. As part of this evaluation, PEC will identify where the GOTS package is deficient and in need of customization.

PEC will design the integration of the multimedia components. This will begin with the design of the video capture component in conjunction with the integration of the real time transcript capture component. The next step is designing a method of synchronizing the video capture with the real time transcription. With the synchronization of the transcript and video capture, PEC designers can identify the method(s) of searching the real time transcript, thus providing exceptional search and playback video and audio capabilities. PEC will include design mechanisms that minimize the effort required by users to pull up identified multimedia objects.

PEC will design the method of capturing additional data sources to include Video Image Capture, Digitizing Pad, and Ad Hoc Multimedia Exhibits. Along with the capture of these objects we will define an interface to capture and associate data fields required for the ADAMS & EHD bibliographic headers.

At the conclusion of the multimedia components integration design task, NRC will be presented with touch screen mockups for the Panel Judge's and the Clerk's interfaces. The NRC will have an opportunity to provide input and suggested modifications to the touch screen interface design. Parallel to the integration of the multimedia components design, PEC will begin the portal and web server design. This entails the design of components relating to the web portal interface. This task will concentrate on the browser-based interface of the web portal as well as the portal extensions required to facilitate the following:

- Search and retrieval for the Attorneys, Judges, Parties, and the Clerk.
- Appropriate collaboration services.
- Exhibit management including the retrieval from EHD and storage into ADAMS

At the conclusion of the portal and web server design task, NRC will be presented a screen mockup for the browser interface. NRC will have an opportunity to provide input and suggested modifications to the browser interface design.

As part of this subtask PEC will prepare a POC Requirements and Design Document. This document will describe the basic technical architecture to be used. It will include a mapping of functional requirements to components, data flows and database design and all other elements required by the SDLCM. In addition, it will describe the evaluation criteria to be used to evaluate the POC once it has been completed and tested by NRC. This document will be submitted to the NRC for review in preparation for the design review. The design review will be conducted, and, based on discussion at this review, the POC Requirements and Design Document will be finalized and delivered to the NRC.

The deliverables created during the performance of the POC Requirements and Design subtask are as follows:

- POC Requirements Matrix
- Security and Risk Assessment Plans
- Contingency Plan
- POC Requirements and Design Document
- Design Review

***Subtask 1.3 - Develop POC***

Based on the requirements and design produced in Subtask 1.2 and approved at the Design Review, we will configure, integrate, and develop the necessary code to implement the POC Pilot System. This will initially include hardware and software component acquisition, setup, and system configuration.

PEC will implement the DDMS database using the DDMS data model designed in task 1.2. This database will contain data elements required by EHD for an exhibit/document's bibliographic header along with data elements specific to DDMS.

We will then perform customization to bring up the portal interface to meet the user interface requirements defined in Subtask 1.2. PEC will configure the system in all areas to include user access rights required to implement and enforce security requirements. Similarly, we will perform integration and configuration activities required to implement the Document Management functionality, audio & video capture, images, and electronic documents.

DDMS will perform exhibit/document transfer to ADAMS by placing exhibits/documents, and related text file with header information, into a predefined directory on the ADAMS server. ADAMS will then retrieve the documents and text files from that directory. Similarly, DDMS will retrieve exhibits/documents from a predefined directory on the EHD server and import them into DDMS. DDMS will also perform a periodic check with EHD to ensure that DDMS and EHD exhibits/documents are identical.

PEC will install and integrate the selected Hearing Management software package with the DDMS.

Once the majority of the integration work has been completed in this subtask, PEC will develop a POC Evaluation Test Plan utilizing the earlier evaluation criteria and incorporating specific test scenarios identified to validate the successful implementation of the POC Requirements defined in the POC Requirements Matrix. PEC will deliver a draft of this test plan for review by the NRC. Once comments are received, changes will be incorporated as agreed and the POC Evaluation Test Plan will be delivered prior to the start of POC System Evaluation Testing by NRC.

The deliverables created during the performance of the Develop POC subtask are as follows:

- POC Evaluation Test Plan
- Operational POC System Ready for Evaluation

***Subtask 1.4 - Production System Requirements and Design Document***

In parallel with the POC Development, PEC will begin the additional activities required to define a complete DDMS Production System. This will include the consideration of requirements and design for functionality required, but not addressed in POC Pilot during Subtask 1.2. PEC assumes that these activities will include additional meetings with Judges, NRC administrative support personnel and other NRC employees. As a result of these activities, PEC will update the POC Requirements Matrix to reflect the expanded final Production System needs.

As part of this Production System design, as before, PEC will analyze and document component interoperability thoroughly. PEC will include a discussion of architectural components such as remote data stores, replication or mirroring components, mechanisms to support access to remote research resources (for NRC personnel versus non-NRC personnel) and desktop production tools. In addition, the design will address how the system will meet reliability, performance, capacities, maintenance, security, and support requirements. Finally, the design description will describe planned upgrade paths from the POC System to the Production System.

As part of this document PEC will include the database design and PEC will develop dataflow diagrams (DFD) depicting the information flow and transformations as data moves throughout the system. PEC will also develop entity relationship diagrams (ERDs) to identify the relationships between the data elements and entities of both internal and external data. In addition, PEC will develop a data dictionary to define and describe all data elements (including metadata), entities, relationships, and data flows of the system. PEC will employ the use of a CASE tool (ERwin) to develop and maintain the DFD, ERD, and data dictionary.

In this document, PEC will also address design issues and access techniques relating to Section 508 accessibility requirements identified in the initial interviews/meeting sessions. PEC's approach to meeting the accessibility requirements of Section 508 is to first define the Agency specific strategies with respect to Section 508 compliance and then to design the system to meet those appropriate access specifications. To determine the effectiveness of the design and

implementation, PEC will test functionality using COTS testing tools such as Bobby. PEC is currently using Bobby to test several internally designed web pages for conformance with 508.

Based on the work to expand the POC requirements and design, PEC will updated the POC Requirements and Design Document to reflect these additional areas. This document will be delivered to the NRC for review in advance of the final Production System Design Review. The Design Review will be held and based on comments and recommendations discussed at the meeting; PEC will update the document and deliver the final Production System Design Document to the NRC.

Once the updated requirements and design concepts have been defined, PEC will conduct any additional interviews and information gathering required updating the Security, Risk Assessment and Contingency Plans. The updated plans will be submitted to the NRC for review. Received comments and recommendation will be incorporated into the final versions of these plans and the completed plans delivered to NRC.

The deliverables created during the performance of the Design subtask are as follows:

- Updated Requirements Matrix
- Production System Requirements and Design Document
- Production System Design Review
- Security and Risk Assessment Plans
- Contingency Plan

***Subtask 1.5 - POC Pilot System Evaluation***

Following the completion of Subtask 1.3, PEC will begin conducting demonstrations and testing of the POC Pilot system. Based on the evaluation criteria defined and agreed to in Subtask 1.2, NRC will use the system and provide feedback. Prior to the start of evaluation testing, PEC will provide the necessary user training to familiarize a focused set of NRC users in the use of DDMS for the purposes of the evaluation. During the course of the evaluation PEC will fix any errors or operational problems, as appropriate. NRC may re-execute evaluation testing following these fixes if necessary. At the conclusion of evaluation testing, PEC will create a Recommendation Revision for Implementation report that recommends modifications and additions to be considered for inclusion during the Production System design enhancement and implementation activities in Tasks 2 and 3. After NRC reviews this document, PEC will update the draft and produce the final report. Finally, PEC will deliver the complied implementation workbook that consolidates the information pertinent to the DDMS system software elements into a Software Engineering Notebook.

The deliverables created during the performance of the Evaluation subtask are as follows:

- Recommendation Revision for Implementation Report
- Software Engineering Notebook

### *2.2.2 Project Schedule*

The Task 1 project schedule is shown in Appendix A. This schedule indicates the timeframes planned for each of the subtasks discussed above and addresses the underlying activities identified in the WBS. Exhibit 2-2 depicts the PEC project team for DDMS.

### *2.2.3 Project Team and Skills*

Our strategy in developing this team was to assign responsibility for critical functionality to the organization strongest in that skill area and to identify the lead analyst or manager as key. This provides the NRC greater visibility into the functional areas of the project and helps ensure stability on the development team. All key personnel report directly to Mr. Rick Schutz, our Project Manager. Exhibit 2-3 depicts the skill breakdown across PEC and our teammates. Note that since Sandra Stasko is on leave as of the date of this writing, Media Edge has provided the services of Randy Ambuel to serve as the Media Edge technical lead until Sandy's scheduled return in November 2002.

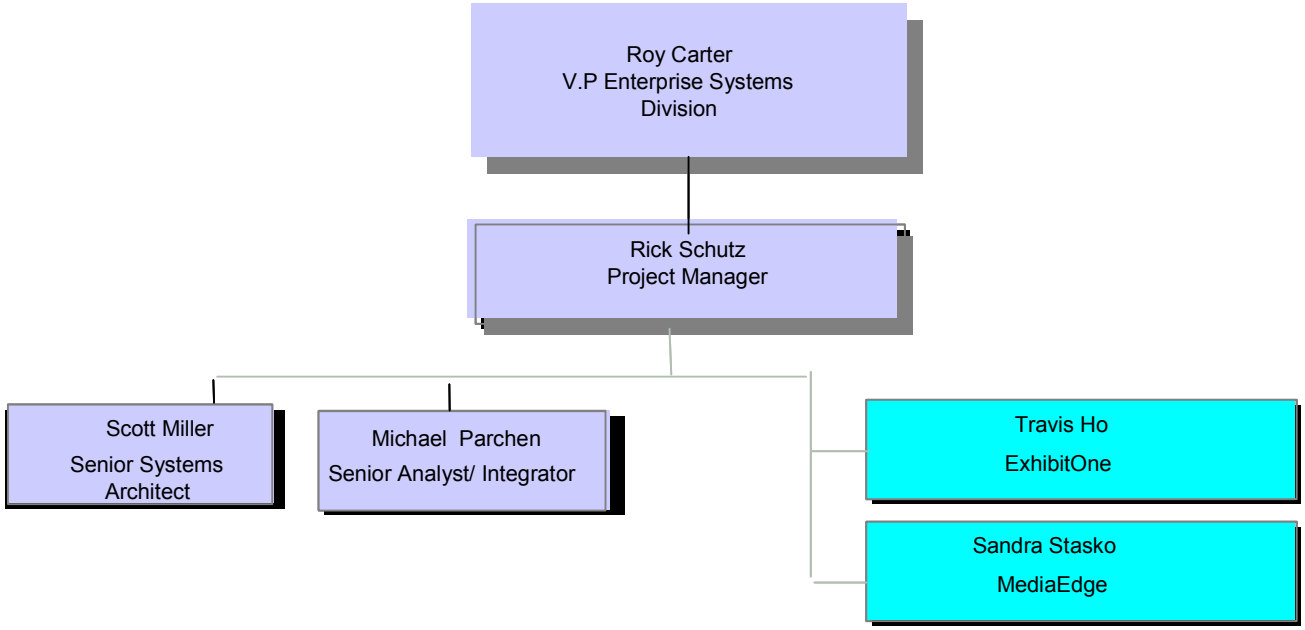



**Exhibit 2-2: PEC's DDMS Project Team Organization**

| *Skills Areas* | *PEC* | *MediaEdge* | *ExhibitOne* |
|---|---|---|---|
| Project Management | ✓ | | |
| Document Management | ✓ | ✓ | |
| Hearing Management | ✓ | ✓ | |
| Multimedia | | ✓ | |
| Audio/Visual Components | | ✓ | ✓ |
| Courtroom Infrastructure Design/Implementation | ✓ | | ✓ |
| Security | ✓ | ✓ | |
| Web Functionality | ✓ | ✓ | |

**Exhibit 2-3: PEC Team Areas of Responsibility**

Exhibit 2-4 depicts skill areas of key personnel. The headings in the columns are abbreviations of the headings in Exhibit 2-3 above.

| *Key Employee* | *PM* | *DM* | *HM* | *MM* | *A/V* | *CI* | *Sec.* | *WF* |
|---|---|---|---|---|---|---|---|---|
| Rick Schutz | ✓ | ✓ | | | | | ✓ | ✓ |
| Scott Miller | ✓ | ✓ | ✓ | | | | ✓ | ✓ |
| Michael Parchen | | ✓ | | | | | ✓ | ✓ |
| Sandra Stasko (Randy Ambuel) | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ |
| Travis Ho | ✓ | | ✓ | ✓ | ✓ | ✓ | | |

**Exhibit 2-4: Key Personnel Skill Sets**

Mr. Rick Schutz will serve as the PEC Project Manager. Rick has led successful requirements, software development, and architecture projects at PEC for more than twelve years. Quite recently he managed the Fairfax County Land Records Project, in which the County's land records were converted from paper to a fully automated, web based imaging system. His successful track record, commitment to our clients, ability to work effectively on a day-to-day basis with his Government counterparts, and his practitioner's understanding of the business process and technical issues in industrial strength software development projects make him our logical choice to lead this effort.

Mr. Scott Miller has extensive experience in the development and management of web based and client server based systems. His application development experience includes, but is not limited to, JAVA, JavaScript, JSP, ASP, RMI, Transaction SQL, PowerBuilder, C++, Crystal Reports, Microsoft IIS, and Apache web servers. His database management experience includes Microsoft SQL Server, Oracle, Informix, and Sybase SQL Anywhere in a variety of Unix/NT/Windows 2000 environments. The application functionality includes case management systems, patent and trademark docketing and imaging systems, and firearm tracing systems.

Mr. Michael Parchen has over fifteen years experience in the IT industry. He has served as a computer programmer/analyst in both the mainframe and microcomputer operating environments. For over eight years, he has been a senior systems analyst supporting Federal Government clients in their developing of complex information systems. He has extensive experience (both with the FBI and the Maryland Judicial System programs) supporting migration from paper based to electronic operating environments.

Mr. Travis Ho is currently the Vice President of Operations at ExhibitOne Corporation in Chandler, AZ. He has been with ExhibitOne since September 2000, and has managed and directed the engineering, design, and installation of over 100 AV systems for courtrooms nationwide.

Ms. Sandra Stasko is the Vice President of a multimedia division of MediaEdge, responsible for growing multimedia related business areas. She has developed prototypes and demos of a distance learning system, and of a corporate portal using Plumtree, Virage, RealNetworks, and XML. The interfaces are written in VB/ASP, JavaScript, JAVA, PERL, and C++. She has established formal technical/development partnerships with Virage, Real Networks, and Plumtree. She is currently the lead software engineer on the NSAToday corporate portal.

Mr. Randy Ambuel is currently working as a Software design engineer implementing multimedia portals using Plumtree with searchable streaming video. He has performed portal architecture studies, implemented Plumtree and supported the administration of the portal. He has also developed a variety of gadgets for Plumtree and in particular video search and retrieval gadgets. He has also worked with the MediaEdge video processing systems working as a producer as well as director. He has synchronized Power Point and speech to text with the video for streaming within the portal.

The planned labor hours for the above personnel for the DDMS subtasks is indicated in Exhibit 2-5 below.

| Person | Subtask 1.1 Project Management | Subtask 1.2 POC Requirements and Design | Subtask 1.3 Develop POC | Subtask 1.4 Production System Requirements | Subtask 1.5 POC Evaluation |
|---|---|---|---|---|---|
| Rick Schutz | | | | | |
| Scott Miller | | | | | |
| Michael Parchen | | | | | |
| Sandy Stasko/ Randy Ambuel | | | | | |
| Travis Ho | | | | | |

**Exhibit 2-5: Summary of People By Subtask**

### *2.2.4 Project Interfaces*

The interfaces between the PEC DDMS team and NRC personnel on the project are both formal and informal. This communication flow is bi-directional. It consists of formal regularly scheduled meetings, reports and ad hoc meetings and communications such as phone conversations and email message exchanges. The details of these interactions are discussed in more detail in Section 2.6, and 2.8.

## 2.3 Risk Management

### *2.3.1 Risk Description*

As with all projects, especially those that are large and/or complex, there are inherent risks. PEC has identified some initial potential risk areas for the DDMS in Exhibit 2-6. The chart is a tool used to document risk assessment. The risk areas are organized into risk factors that are rated as high, medium, or low.

### *2.3.2 Risk Management Process*

PEC will define and manage the initial set of risks, review them on a regular basis, and, in conjunction with the NRC, update, delete, or add to them as appropriate. Every month, at one of the weekly status meetings, a project risk review will be conducted. PEC will discuss mitigation approaches that have been identified and work closely with the NRC DDMS team members to further refine and select the best mitigation approaches for each risk. An updated risk assessment in the form of a living Risk Report will be prepared based on this ongoing review of the risks by PEC and the NRC. In preparation for the risk review, the PEC liaison office will solicit input and status from appropriate parties and update the chart. Follow-up actions will be recorded and tracked, as either assignments or issues. Exhibit 2-6 is a sample of the type of risk identification and tracking table PEC will utilize.

| Risk No. | Risk | Description | Expectation of Occurrence | Impact | Status | Comments |
|---|---|---|---|---|---|---|
| 1 | Difficulties in defining and interfacing to NRC Systems (EHD and ADAMS) | Undefined and unstable operation of interfaces don't provide adequate support to identified DDMS Operation | Moderate | High | Mitigation defined | Work directly with ASLBP, OCIO, SECY and DPC personnel and take interface definitions directly from existing systems. |
| 2 | Requirements do not stabilize before development | Will increase cost and complexity | Moderate | High | Addressed using FRM | All parties must control requirements creep. |

| Risk No. | Risk | Description | Expectation of Occurrence | Impact | Status | Comments |
|---|---|---|---|---|---|---|
| 3 | Limiting concurrent use of advanced technologies | Not all technology features can necessarily be used concurrently | High | High | Open | Users must agree to tailor the use of technology within user interface constraints |

**Exhibit 2-6: Sample of Potential Risk Area**

### *2.3.3 Problem Resolution*

PEC's approach to problem solving recognizes that problems are a natural part of the project life cycle. Although PEC can anticipate some problems and, with proper planning avoid or minimize them, it is usually those we cannot anticipate that have the most impact. Responding to unanticipated problems requires preparation from the start to respond quickly and decisively.

To address this issue PEC has assigned a senior team of talented personnel who have proven themselves in previous assignments. These individuals have the experience to anticipate and avoid problems, and they have the confidence to make decisions based on informed qualitative judgments. In addition, PEC will also use several key management techniques to identify and resolve problems during performance of the DDMS program, including:

- **Work planning using automated project planning tools to identify potential problems early in the project.** PEC has prepared a detailed internal project plan using Microsoft Project. Critical project elements are represented and activity completion monitoring will be continually used to assess project progress and to identify completion projection trends. The project plan will become the baseline plan. We have also created a week-by-week labor tracking tool using Microsoft Excel to compare actual vs. budgeted resource consumption rates. Monthly reviews of progress against project milestones and expended resources in the work plan will provide early indication of potential problems.

- **Timely financial and resource reporting using PEC's Project Management System to compare objective progress against resources expended.** PEC's Project Management System will provide the Project Manager the information necessary to measure progress. PEC's project managers will receive Project Management System reports key elements in our overall project management approach within five days of the close of our accounting cycle.

- **Adherence to our contract quality assurance program and process for continuous feedback.** Regular internal project management reviews. PEC managers meet regularly to review progress status and problems. They will track actions they assigned as a result of these meetings at the corporate level until they are completed.

- **Close liaison with the DDMS project staff including weekly and monthly status, progress, and problem reporting.** PEC will work closely with DDMS project staff to understand the government's technical and management concerns and priorities.

## 2.4 Quality Assurance

This section details our approach to be used in providing a DDMS solution that is designed, developed, integrated and deployed with quality management throughout the program, system, and data lifecycle.

### *2.4.1 Quality Assurance*

Quality Assurance (QA) is a planned and systematic set of activities, that is an integral part of PEC's project management approach, which will provide management both client and PEC with a view of high quality products being produced. PEC DDMS project management will rely on these activities to produce high quality products throughout the DDMS life cycle and to assure client satisfaction. These activities will include but are not limited to:

- Inspecting, reviewing, and auditing the DDMS activities and products to verify that they comply with the published SDLCM procedures, standards, and requirements.
- Informing management, groups, and individuals of the results of the quality assurance inspections, reviews, and audits.
- Ensuring senior/program management addresses noncompliance issues that cannot be resolved within the DDMS project.
- Measuring the completion of milestones compared to the project schedule.

These quality assurance activities will occur throughout the DDMS life cycle and will be communicated to all levels of project operation through continuous feedback processes to assure that management and project personnel are provided with the visibility needed to ensure adherence to established plans, procedures, standards, and requirements.

The DDMS project will comply with the QA procedures, standards, and forms contained in the SDLCM. The team's QA members work as key members of the team. They will review all deliverables and will participate directly in the development process by auditing the development teams outputs and attending design and development reviews.

The DDMS project will use the SDLCM quality assurance processes and procedures to implement an internal Quality Assurance Plan (QAP). This plan will identify the project team members responsible for performing quality assurance and maintaining the relationships between QA and other parts of the organization (i.e., program management, configuration management, system design and development personnel). The QAP will also describe the project management

organization, tasks and responsibilities, reviews and audits; and address problem reporting and corrective action; tools, techniques, and methodologies.

### *2.4.2 Configuration Management*

Configuration Management (CM) is the discipline of applying management, administrative, and technical procedures throughout the DDMS life cycle to:

- Identify, define, and baseline software, hardware, and associated DDMS documentation.
- Control modifications to, emergency fixes and releases of, the DDMS baseline.
- Record, manage, and report the status of the baselines and modification requests.
- Ensure baseline completeness, consistency, and correctness while assuring quality and secure product delivery.
- Control storage, handling, and delivery.

In managing, designing, developing and integrating the DDMS products PEC will conduct the following CM activities:

- CM Process implementation definition and documentation of the configuration management activities.
- Configuration identification definition and identification of items subject to configuration control.
- Configuration control, evaluation, coordination, review and document approval or disapproval of proposed changes to controlled items.
- Configuration status accounting recording, monitoring and managing of changes to controlled items.
- Configuration evaluation verification and validation that controlled items meet their assigned requirements and are accurately documented.

The DDMS project will comply with the CM procedures, standards, requirements, and forms contained in the NRC SDLCM. All DDMS deliverables (software patches, updates, enhancements, fixes), hardware, and documentation will be under CM control throughout the DDMS life cycle. CM will be responsible for the control and promotion of software from development to unit and system testing, to acceptance testing, and to the production environment. CM will control changes to the production environment by promoting only those changes reviewed, approved, and tested by the DDMS Change Control Board (CCB). Once CM and appropriate personnel test and accept the change, CM will document and record the approved change and submit to appropriate personnel the change for promotion to the production environment.

PEC will maintain a central repository of the documentation produced and accepted for the DDMS project using Microsoft's Source Safe. Within the repository a separate folder will be produced and maintained for each deliverable. PEC will also create and securely archive the

repository to maintain a backup of the deliverables in the event that a disaster or corruption of the main repository should occur.

### *2.4.3 Data Management*

PEC Data Management processes and procedures, which are tightly integrated with its CM Program, will include monitoring, administering, maintaining, and managing changes to project documentation and data resources including official project correspondences.

### *2.4.4 Records Management*

PEC Solutions Records Management (RM) processes are established and controlled by senior management and managed within our policies and procedures associated with reporting and record keeping. This section addresses the following RM processes that will be applied to the DDMS Project.

- NRC DDMS components inventory
- Contract Reporting
- Contract Records (i.e., deliverables, reviews, inspections, design, development, and security)
- Time and Expense Reporting (Monthly reports)
- Invoices.
- Monthly Status Reports (as described in Section 2.1).
- Problem Notification Reports (as described in Section 2.6).
- Fund Expenditure Reports (as described in Section 2.6).
- Deliverables and SDLC Documentation will be submitted throughout the DDMS project life cycle in accordance with the project schedule. PEC will maintain all documentation, software and hardware components within a central repository and will deliver the repository at the completion of the DDMS project.

- Meeting Minutes will be documented in accordance with the SDLCM.

PEC will comply with the SDLCM standards, procedures, forms, and requirements for all DDMS records and will ensure that all DDMS deliverable milestones are met in accordance with the project schedule.

PEC will manage and maintain a repository of all DDMS records it generates throughout the project lifecycle.

In addition to project records, PEC will manage and record its time (labor) and expense reporting based on the task worked. Employees will record direct contract labor against the appropriate task or subtask every two weeks. Expense reports will be submitted on the same schedule. PEC will submit invoices detailing our time (labor) and expenses to the NRC on a monthly basis and will maintain all time reporting and invoicing records within the NRC DDMS repository.

## 2.5 SDLCM Methodology Tailoring

The DDMS Project Team will follow the NRC SDLCM Methodology accommodating tailoring where it is in the best interest of the NRC. PEC will implement the Incremental Development Life-cycle Model since the integration of the technology to be used in the DDMS system in the electronic courtroom requires that NRC be able to incorporate refinements to the system based on initial tests by Judges and court administration participants. Using this approach, PEC will define the requirements and design the Proof of Concept (POC) system, receive approval to proceed and then build and test the system. Based on the results of this evaluation testing, PEC will complete the requirements refinement and the detailed design for the full production DDMS system. The NRC SDLCM provides for this approach since it reduces risk of schedule slips, requirements changes, and acceptance problems. In addition, this SDLCM approach allows the system users a chance for early operational training, the ability to validate the DDMS as it is being developed and the ability for the team to defer development of less well understood and new technologies to a later time after issues have been resolved.

## 2.6 Reports

The PEC DDMS Project Team will submit a set of reports to the NRC on a periodic basis. Summary information about each type of status report appears in Exhibit 2-7 below. Detailed information appears in the following paragraphs.

| Report Type | When Due | Author |
|---|---|---|
| Weekly Activity | Every Tuesday at COB | Project Manager/ Technical Director |
| Problem Notification Report | As required | Project Manager/ Technical Director |
| Monthly Project Status Reports | Monthly, by the 15th of each month | Project Manager/ Technical Director |

**Exhibit 2-7: Report Types**

**Weekly Activity Reports:** PEC will submit a report weekly to the NRC Project Managers and their designees by COB the Tuesday following the close of a reporting period. These activity reports will include a proposed agenda for the Wednesday Project Meeting, describe the previous period's activities, including work progress in the key project areas; and management and technical issues that may impact schedule, cost, or technical risk. They also include a forecast of activities for the next reporting period.

**Problem Notification Reports:** Within 24 hours after identification of the problem and upon determination that the problem cannot be resolved below the PM level, PEC will submit to the NRC Project Managers, a report of any problem we anticipate that may affect the project. PEC will submit this report electronically.

**Monthly Project Status Report:** PEC will update the Project Management Plan on a monthly basis, as required, and submit a Monthly Status Report to the NRC Project Officer and the Contracting Officer by the 15th of each month. The plan updates includes such items as the Project Schedule, Work Breakdown Structure and budget information. The status report will include a summary of work performed during the period, statistics and plans for the next reporting period, and a discussion of any current operational considerations.

In addition, PEC will provide NRC with project tracking information that indicates monthly expenditures against budgeted expenditures. This will utilize the information reported in our monthly internal Program Management Reports (PMRs) results and the spending budget that PEC will keep on an on-going basis throughout the project. PEC will also report the earned value of the project to date.

## 2.7 Meetings

PEC will conduct meetings in accordance with Exhibit 2-8 below.

| Meeting Type | When Held | Output |
|---|---|---|
| Weekly Project | Weekly, every Wednesday | Discussion of Weekly Activity Reports and management and technical issues |
| Internal PEC DDMS Team Reviews | Weekly | Decisions, assignments, information, and project review |
| Ad Hoc Meetings | As needed | Technical and management issues, decisions, assignments, and information |

**Exhibit 2-8: Meeting Types**

**Weekly Project Meetings** - PEC will meet weekly with the NRC DDMS Project Team every Wednesday. Discussions will include the content of the Weekly Activity Reports, current management and technical issues that may impact schedule, cost, or technical risk, and plans for the upcoming period.

**Internal PEC DDMS Team Reviews** -The PEC Project Manager will conference via telephone with each teammate on at least a weekly basis. Decisions, assignments, project information, and project status will be discussed. The open and frequent communication among the PEC DDMS team will ensure timely and quality products.

**Ad Hoc Meetings** - Once the project begins PEC will most likely need to set up one or more additional periodic, informal meetings. These could include Requirement and Design Review meetings, scope change meetings, and configuration review meetings. PEC will document the results of each meeting to further support communications between the contractor and the NRC teams.

## *2.8* Points of Contact

Exhibit 2-9 shows PEC's points of contact with the Government and the ways in which PEC's personnel and functions will match the Government's. Well defined points of contact enable unambiguous lines of communication, an important element of contract and project management. Clear lines of communication are important in all system development and integration contracts, especially as their complexity increases. This section identifies PEC's points of contact for DDMS Project contract performance. In addition, Appendix B contains the initial DDMS Project Team Contact List.

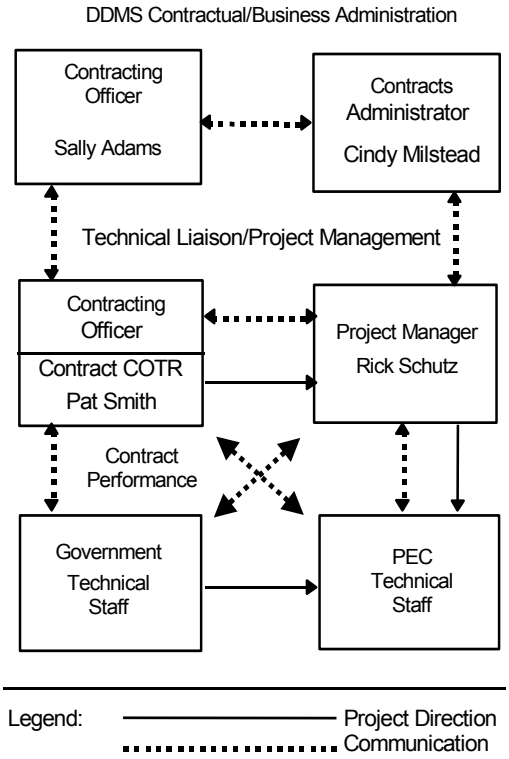



**Exhibit 2 - 9: Summary of Points of Contact**

Cindy Milstead, a Contracts Administrator, will be the assigned as the PEC contract administrator for the DDMS contract. Ms. Milstead will be the point of contact for all formal contractual communications between PEC and the Government. Ms. Milstead will receive all formal communications and coordinate PEC's formal response to the Government.

Communication will be both formal and informal and will include at least these levels:

- **Contractual/Business Communications**. These communications will occur between the Government Contracting Officer (CO) and PEC's contract administrator, Ms. Milstead. Communication in this area typically includes formal submission of proposals, project deliverables, contract administration matters, and correspondence that identifies and resolves problems.

- **Technical Liaison/Project Management Communications**. This level of communication will take place between Pat Smith, NRC's DDMS Project Manager and our Project Manager, Rick Schutz. This level of communication will relate to overall project technical direction and issues as well as progress towards meeting project objectives.

- **Contract Performance Communications.** This level of communication will take place between the Government's technical or project staff and PEC's technical staff reporting to PEC's Project Manager. Communications at this level will include day-to-day technical interchange and make up the bulk of communication between PEC and NRC because they involve daily task work activities.

## 2.9 Subcontractor Management

This section addresses how PEC will manage our subcontractors and select additional subcontractors if necessary.

For the DDMS project, PEC will use its subcontractor management procedures to ensure a consistent approach to selecting and managing subcontractors. Our objective will be to ensure we obtain quality work from our subcontractor resources by achieving these individual goals:

- Ensure PEC and subcontractors agree to commitments to each other.
- Ensure PEC and subcontractors maintain ongoing communication.
- Track subcontractor's actual results and performance against commitments.

As the foundation of our subcontracting approach, PEC will use Statements of Work (SOW) as the basis for managing each subcontract. The SOW establishes the technical and non-technical requirements, the subcontractor work required, and the plans for the work. PEC will flow down to subcontractors any NRC-specific requirements and standards that are appropriate for the work scope and complexity of the effort. The subcontractor will perform planning, tracking, and oversight activities for subcontracted work. PEC will perform planning, tracking, and oversight

activities and ensure that the subcontractor end item products satisfy PEC and the NRC acceptance criteria as specified in the SOW. PEC will work with the subcontractor to manage their product and process interfaces. This subcontract will also include the reporting and meeting mechanisms in detailed in Sections 2.6 and 2.8 of this document, respectively.

Subsequent to establishing this foundation, PEC will use the following approach to monitor the progress and quality of subcontractors under this contract:

- Monitor subcontractor progress versus schedule
- Conduct management/technical reviews
- Monitor subcontractor adherence to the statement of work
- Manage and control requirements
- Evaluate deliverable products
- Assess subcontractor performance.

### *2.10 Security Clearances*

The PEC DDMS team will apply for and obtain NRC security clearances at the IT 1 level. This will enable the team personnel to gain unescorted access to NRC facilities for attendance at meetings. This will also allow PEC team member to work on the DDMS system once the POC system is installed at the NRC.

### *2.11 Equipment Acquisition*

PEC will provide all components as specified in our proposal. For the POC, NRC will provide required printers and scanners to be used in the Hearing Room. All hardware and software acquisition activities will be performed by PEC under the terms of the contract with the appropriate authorizations issued by NRC's CO enabling PEC to order parts from the GSA schedule. Equipment will be ordered once approval of the POC design is given at the completion of the POC design review. The project schedule has allocated lead time between when the parts are ordered and when they are incorporated and configured into an initial development system. Once received, PEC will notify NRC of the receipt of the components so they can be tagged and inventoried in accordance with NRC procedures.

# Section 3 Software Development Plan

## *3.1 Overview of Software Development and Integration Activities*

The DDMS Integration Team will utilize NRC's SDLCM Methodology standards and procedures for all development with minor tailoring to support an Incremental Development Life-cycle Model. An essential step in successful software development is a walk-through of the planned design. Based on the baseline schedule the DDMS Design Review for the POC system will be conducted the middle of November 2002. Deliverable products will be subject to several levels of internal management and technical reviews prior to release. The technical leader for the deliverable is responsible for performing a formal review of the technical accuracy and suitability of the product against requirements and for seeking independed peer review of the product. Efficient use of COTS tools and applications by the development and integration team will greatly reduce the need to develop custom code. Any custom code created will be checked into our Source Safe configuration management (CM) tools and maintained under CM control. This will ensure the integrity of the software baseline. Peer Reviews will be conducted to evaluate the system design and any custom code that is developed. These evaluations, together with unit, integration and system testing, will ensure that the code implements the design and more importantly the requirements of the system specified in the requirement cross reference matrix.

## 3.2 Software Development Organization and Responsibilities

### *3.2.1 Integration and Development Team Personnel*

The Program Manager (PM) is responsible for:

- Planning and scheduling of Project activities;
- Allocating and directing staff to accomplish tasks;
- Removing obstacles to project success;
- Monitoring and coordination of all Project activities;
- Reporting of Project Status to customer and PEC management;
- Staffing activities required to complete all deliverables defined in the SOW;
- Coaching and developing team members;
- Coordinating and developing the business and technical aspects of the program;
- Delivering quality products throughout the project; and
- Monitoring and controlling of the Project Budget.

The Senior Integrator is responsible for:

- Technical project coordination and all related technology aspects of the project;
- Overall Systems Design
- Managing all technical development of the system;

- Possessing high-level knowledge of technology, tools and methodology used in the project as well as a sound understanding of the goals, objectives and requirements of the system being created;
- Hardware integration;
- Performance analysis;
- Developing prototypes;
- Building the application;
- Directing the integration and development team;
- Directing staff and contractors involved in the integration and development aspects of the project;
- Refining the design;
- Working closely with the Program Manager to create the system;
- System administration;
- Controlling the development schedule; and
- Stepping in to be the Program Manager in his absence.

The Requirements analysts are responsible for:

- System requirements definition;
- High Level system design;
- Gathering technical alternatives;
- Testing against user and technical requirements;
- Documenting the requirements, design, software, and operational and maintenance processes;
- Developing and obtaining approval for all project products; and
- Following SDLCM Methodology guidance.
- System testing of hardware and COTS software;
- System testing of custom, non-COTS software;
- Preparing test reports;
- Coordinating delivery activities between Configuration Management and the government;
- Testing the application;
- Initial user test planning, coordination, and feedback;
- Assisting NRC with acceptance test
- Preparing end-user and tutorial training materials, and
- Preparing operational support guide materials.

Quality Assurance (QA) is responsible for:

- Ensuring that all deliverables comply with SDLCM Methodology procedures, standards, and forms;
- Performing audits of deliverables to ensure that they satisfy required functions; and
- Conducting project audits at the end of each life-cycle phase.

Configuration Management (CM) is responsible for:

- Ensuring that Project CM capabilities comply with the SDLCM Methodology procedures, standards and forms;
- Providing configuration control of all deliverables;
- Promotion of software from development, to unit test, to system integration test, to government acceptance test, and to production; and
- Configuration Control Board activities.

### *3.2.2 Interfacing Groups*

The Interfacing Groups are documented in Section 2.8, of this document.

## 3.3 Software Development Technical Approach

The software development technical approach that will be followed throughout the project is described in the following subsections.

### *3.3.1 Activities, Tools, and Products*

The life cycle phases to be performed during the performance period of the DDMS contract are identified on the project schedule shown in Appendix A. These phases include: project management; POC requirements analysis and design; POC development; Production System requirements analysis and design and POC Evaluation. The tool(s) to be used during each life cycle phase are identified in the following table:

| Tool | Project Management | Analysis | Design | Development | Internal Testing | User Testing | NRC Acceptance Testing |
|---|---|---|---|---|---|---|---|
| Adobe Acrobat 5.0/Capture | | | | x | x | | |
| Erwin | | | x | | | | |
| JAVA (JDK 2.1 environment) | | | | x | x | | |
| MediaEdge Video Application Server | | | | x | x | | |
| MediaEdge Video Indexing Software | | | | x | x | | |
| Microsoft Streaming Video Server | | | | x | x | | |
| MS Excel | x | | x | x | x | | |

| Tool | Project Management | Analysis | Design | Development | Internal Testing | User Testing | NRC Acceptance Testing |
|---|---|---|---|---|---|---|---|
| MS PowerPoint | x | | | | | | |
| MS Project | x | | | | | | |
| MS Word | x | x | x | | | | |
| MS Visio | x | x | x | x | x | | |
| PEC Requirements Traceability Tool | | x | | x | x | | |
| Plumtree Collaboration Server | | | | x | x | x | x |
| Plumtree Corporate Portal Server | | | | x | x | x | x |
| MS SQL Server | | | x | x | x | x | |
| Seagate Crystal Reports | | | | x | x | | |
| Verity K2 Spider | | | | x | x | | |
| WordPerfect | x | | x | | | | |

All written project documentation will be provided to the government in PDF and MS Word format, as desired.

### *3.3.2 Implementation*

The planned use of COTS software packages will provide approximately 80 percent of the DDMS functionality. The DDMS Team will create a Graphical User Interface (GUI) that presents a uniform and intuitive look and feel. This will be done using Plumtree's Corporate Portal product. Screen layouts, including icons, pull down menus, keys, and tool bars will be in compliance with Section 508 Guidelines.

### *3.3.3 Testing*

The PEC DDMS Project Team will conduct unit, integration, and system testing of all integrated software. The POC system testing will include functional and performance testing in terms of system responsiveness. Ultimate testing of the full Production System will include full performance and availability testing. Final testing of the POC releases will be conducted at the NRC by the PEC DDMS team with members of the NRC DDMS team witnessing the testing.

After completion of system testing, PEC DDMS testing personnel will support the NRC in POC evaluation/acceptance testing. Acceptance testing is performed to validate the system against the original requirements. Acceptance testing begins after completion of system testing. Acceptance testing will be performed in accordance with the Government approved test plans. A draft POC Test Plan will be provided to NRC in May 2003, with the final POC test plan to be delivered the latter part of May 2003.

## 3.4 Software Development Management Approach

The Project Manager will employ a variety of management tools to manage all aspects of the DDMS project during the software development life cycle phases. These tools include:

The project documentation, specifically the:

- Project Action Plan (PAP) that also includes the Project Management Plan. This contains sections addressing Schedule, Work Products List,
- Project Definition and Analysis Document (PDAD)
- DDMS Design Document that includes sections covering both Logical and Physical Design descriptions
- Monthly and Cumulative Financial Charts, Organization Chart
- Risk Report that includes the identification and mitigation plans
- Metrics that include assessment type information from peer reviews, change requests, Configuration Control Board meetings, quality assurance activities, configuration management activities and requirements management activities.

Weekly and monthly meetings between NRC and PEC are scheduled to review the project activities that have been accomplished and prepare for upcoming project milestones. The monthly status meeting will be conducted on the 15th of each month in order to allow PEC's Finance Department adequate time to prepare data to be input to the monthly financial charts. Monthly labor costs, cumulative labor costs to date and earned value number presented at these meetings will be documented in the monthly status reports and will then used by the Project Manager to track task completion.

### *3.4.1 Software Development Resource Requirements*

The following table indicates the staff effort required to design, develop, and deploy the DDMS system, together with the estimated number of hours for each labor category.

| **Task Areas** | **Hours** |
|---|---|
| Task One – Design Full DDMS Capability, Implement POC | |
| Project Management Plan | |
| POC Requirements and Design Definition | |
| POC Development | |
| Full Production DDMS Requirements and Design Definition | |
| POC Evaluation | |

### *3.4.2 Software Development Milestones and Schedules*

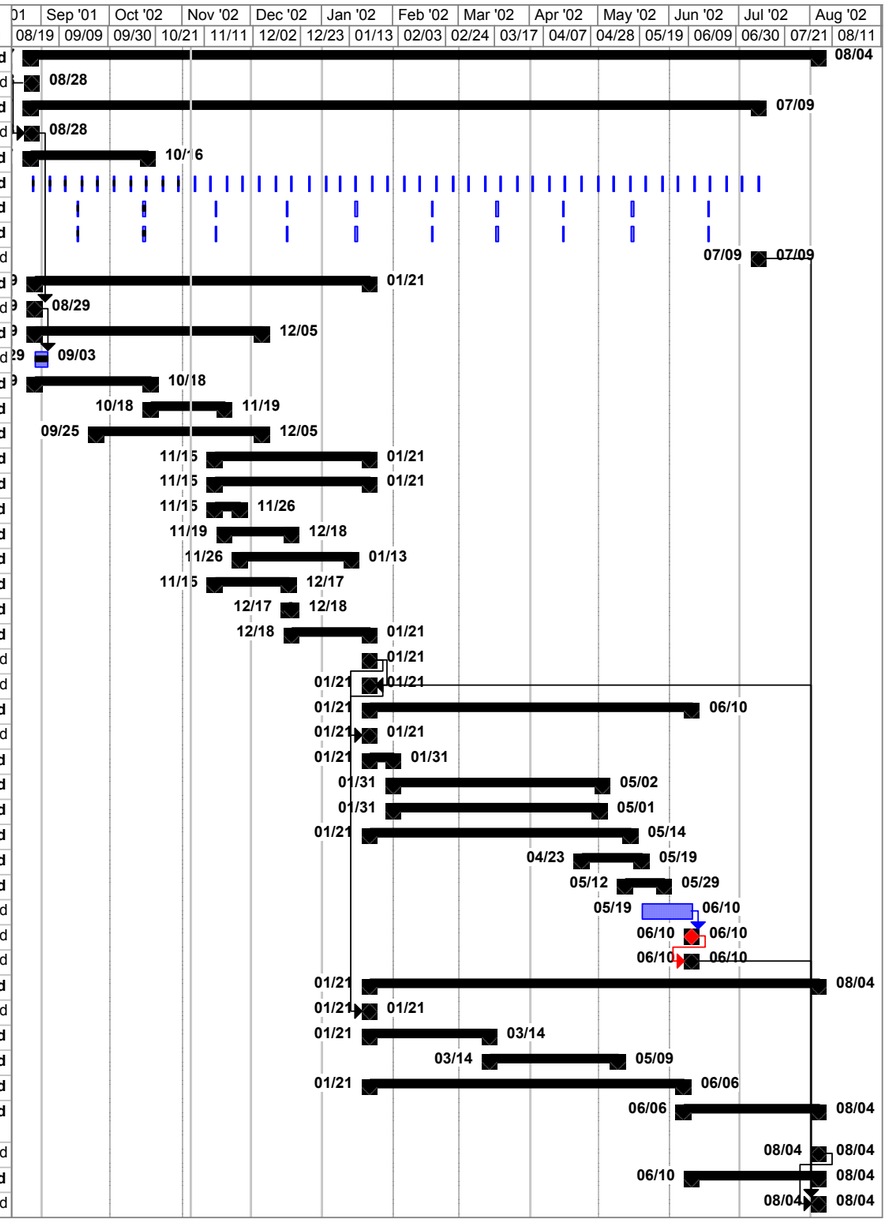
See Appendix A.

### *3.4.3 Software Development Measures*

The PEC DDMS Team will use an earned value system to monitor the development of the DDMS. Activities will be defined for tangible interim products. Staffing for each activity will be identified, and a staffing profile for the project will be prepared. Microsoft Project will be used to schedule and report on development progress. Earned Value Management System (EVMS) will be tracked using 0% (work has not begun), 50% (work started), and 100% (work completed and deliverables delivered to the government). Additionally, at the monthly status meetings PEC will provide the government an updated copy of the Project Schedule, as necessary, and a spreadsheet indicating financial information for the past month.

# Appendix A - Schedule and Cost Projections

| ID | WBS No. | Task Name | Duration |
|---|---|---|---|
| 1 | **1** | **Task 1--DDMS Proof of Concept** | **235.75 d** |
| 2 | 1.1 | Begin Task 1 | 0 d |
| 3 | **1.2** | **Subtask 1.1 - Kickoff Meeting and Project Management** | **217.5 d** |
| 4 | 1.2.1 | Begin Subtask 1.1 | 0 d |
| 5 | **1.2.2** | **Produce Project Management Requirements** | **35 d** |
| 18 | **1.2.3** | **Prepare for Weekly Project Mgmt Meetings @ NRC** | **216.5 d** |
| 67 | **1.2.4** | **Prepare for Monthly DDMS Program Status Meetings** | **202 d** |
| 80 | **1.2.5** | **Develop Project Mgmt Plan Updates** | **202 d** |
| 93 | 1.2.6 | End Subtask 1.1 | 0 d |
| 94 | **1.3** | **Subtask 1.2 – POC Requirements and Design** | **97.75 d** |
| 95 | 1.3.1 | Begin Subtask 1.2 | 0 d |
| 96 | **1.3.2** | **POC Requirements** | **66.75 d** |
| 97 | 1.3.2.1 | **Subtask 1.2.1-Initial Analysis of Documentation/Inputs** | 2.5 d |
| 98 | **1.3.2.2** | **Subtask 1.2.2-Setup & Conduct Initial Interviews** | **34.75 d** |
| 108 | **1.3.2.3** | **Subtask 1.2.3- Analyze POC Requirements & Brief NRC** | **22 d** |
| 111 | **1.3.2.4** | **Hearing Management Software Survey** | **48.75 d** |
| 146 | **1.3.3** | **POC Design** | **43.5 d** |
| 147 | **1.3.3.1** | **Subtask 1.2.4-Begin Design** | **43.5 d** |
| 148 | **1.3.3.1.1** | **Subtask 1.2.4.1 DDMS Database Data Modeling** | **7 d** |
| 151 | **1.3.3.1.2** | **Subtask 1.2.4.2 Multimedia Subsystem Design** | **19 d** |
| 162 | **1.3.3.1.3** | **Subtask 1.2.4.3 Portal/Web Server Design** | **30 d** |
| 174 | **1.3.3.1.4** | **Subtask 1.2.4.4 Hearing Management Design** | **20 d** |
| 178 | **1.3.3.1.5** | **Subtask 1.2.4.5 Create POC Requirements and Des** | **1.5 d** |
| 181 | **1.3.3.1.6** | **Subtask 1.2.4.6 Refine Design and Develop POC Re** | **22 d** |
| 186 | 1.3.3.1.7 | **POC System Design Review** | 0 d |
| 187 | 1.3.4 | End Subtask 1.2 | 0 d |
| 188 | **1.4** | **Subtask 1.3 – Develop POC** | **98 d** |
| 189 | 1.4.1 | Begin Subtask 1.3 | 0 d |
| 190 | **1.4.2** | **Subtask 1.3.1 Dev'l System Configuration/Setup** | **8 d** |
| 199 | **1.4.3** | **Subtask 1.3.2 – Multimedia Management Development (Medi** | **64 d** |
| 211 | **1.4.4** | **Subtask 1.3.3 - Portal /Web Server Development (Media Edg** | **63 d** |
| 226 | **1.4.5** | **Subtask 1.3.4 - Hearing Management Setup and Testing** | **80 d** |
| 231 | **1.4.6** | **Subtask 1.3.5 - Internal POC Testing** | **18 d** |
| 239 | **1.4.7** | **Subtask 1.3.6 - POC System Configuration & Installation @ N** | **12 d** |
| 243 | 1.4.8 | **Subtask 1.3.7 - On-site System Testing** | 15 d |
| 244 | 1.4.9 | **Deliver Operating POC System at NRC Ready for Testing** | 0 d |
| 245 | 1.4.10 | End Subtask 1.3 | 0 d |
| 246 | **1.5** | **Subtask 1.4 - Production System Requirements/Design** | **136 d** |
| 247 | 1.5.1 | Begin Subtask 1.4 | 0 d |
| 248 | **1.5.2** | **Subtask 1.4.1 Production System Requirements** | **37 d** |
| 256 | **1.5.3** | **Subtask 1.4.2 Production System Design** | **40 d** |
| 262 | **1.5.4** | **Subtask 1.4.3 Deliver Production System Requirements and** | **96 d** |
| 272 | **1.5.5** | **Subtask 1.4.4- Security and Contingency Plans for Production system** | **40 d** |
| 282 | 1.5.6 | End Subtask 1.4 | 0 d |
| 283 | **1.6** | **Subtask 1.5 - POC Evaluation** | **38 d** |
| 298 | 1.7 | End Task 1 | 0 d |




***DDMS Task 1 Project Schedule***

| ***Month*** | ***Budgeted Monthly Spending*** |
|---|---|
| Aug-02 | |
| Sep-02 | |
| Oct-02 | |
| Nov-02 | |
| Dec-02 | |
| Jan-03 | |
| Feb-03** | |
| Mar-03 | |
| Apr-03 | |
| May-03 | |
| Jun-03 | |
| Jul-03 | |
| Aug-03 | |
| | |
| Total Labor | |
| **Assumes Components billed in Feb 03 | |
| Total | |

**Exhibit A-2: DDMS--Task 1 Proof of Concept Projected Monthly Spending Plan**

| **Month** | **Cumulative Budgeted Total Spending** |
|---|---|
| Aug-02 | |
| Sep-02 | |
| Oct-02 | |
| Nov-02 | |
| Dec-02 | |
| Jan-03 | |
| Feb-03** | |
| Mar-03 | |
| Apr-03 | |
| May-03 | |
| Jun-03 | |
| Jul-03 | |
| Aug-03 | |
| | |
| **Assumes Components billed in Feb 03 | |

**Exhibit A-3: DDMS--Task 1 Proof of Concept Projected Cumulative Spending Plan**

# Appendix B - DDMS Project Team Contact List

# DDMS Project Contact List

## *PEC*

| *Organization* | *First Name* | *Last Name* | *Phone No.* | *email addr.* | *fax no.* |
|---|---|---|---|---|---|
| PEC | | | | | |
| PEC | | | | | |
| PEC | | | | | |
| PEC | | | | | |
| PEC | | | | | |
| PEC | | | | | |
| PEC | | | | | |
| PEC | | | | | |
| PEC | | | | | |
| PEC | | | | | |
| PEC | | | | | |
| PEC | | | | | |
| Media Edge | | | | | |
| Media Edge | | | | | |
| Media Edge | | | | | |
| ExhibitOne | | | | | |
| ExhibitOne | | | | | |

## *NRC*

| | | | | | |
|---|---|---|---|---|---|
| ASLBP | | | | | |
| OCIO | | | | | |
| OCIO | | | | | |
| ASLBP | | | | | |
| ASLBP | | | | | |
| SECY | | | | | |
| SECY | | | | | |
| ASLBP | | | | | |
| ASLBP | | | | | |
| ASLBP | | | | | |
| DC | | | | | |
| ASLBP | | | | | |
| SECY | | | | | |
| NSA | | | | | |
| NSA | | | | | |
| NSA | | | | | |
| NSA | | | | | |

**Exhibit B-1: DDMS Project Team Contact Information**

# Appendix C - DDMS Task 1 Work Breakdown Structure (WBS)

| *WBS Number* | *WBS Element* |
|---|---|
| 1 | Task 1--DDMS Proof of Concept |
| 1.1 | Begin Task 1 |
| 1.2 | Subtask 1.1 - Kickoff Meeting and Project Management |
| 1.2.1 | Begin Subtask 1.1 |
| 1.2.2 | Produce Project Management Requirements |
| 1.2.2.1 | Develop Kickoff Briefing |
| 1.2.2.2 | Deliver Kickoff Briefing |
| 1.2.2.3 | Develop Project Action Plan |
| 1.2.2.4 | Deliver Draft Project Action Plan |
| 1.2.2.5 | Receive NRC comments |
| 1.2.2.6 | Update & Finalize Initial PAP |
| 1.2.2.7 | Deliver Initial PAP |
| 1.2.2.8 | Develop Project Definition and Analysis Document |
| 1.2.2.9 | Deliver Draft Project Definition and Analysis Document |
| 1.2.2.10 | Receive NRC comments |
| 1.2.2.11 | Update & Finalize PDAD |
| 1.2.2.12 | Deliver PDAD |
| 1.2.3 | Prepare for Weekly Project Mgmt Meetings @ NRC |
| 1.2.4 | Prepare for Monthly DDMS Program Status Meetings |
| 1.2.5 | Develop Project Mgmt Plan Updates |
| 1.2.6 | End Subtask 1.1 |
| 1.3 | Subtask 1.2 – POC Requirements and Design |
| 1.3.1 | Begin Subtask 1.2 |
| 1.3.2 | POC Requirements |
| 1.3.2.1 | Subtask 1.2.1-Initial Analysis of Documentation/Inputs |
| 1.3.2.2 | Subtask 1.2.2-Setup & Conduct Initial Interviews |
| 1.3.2.2.1 | Begin initial interviews |
| 1.3.2.2.2 | Develop Interview Questionnaires |
| 1.3.2.2.3 | Interviews with Judges |
| 1.3.2.2.4 | Interviews with ASLBP Staff |
| 1.3.2.2.5 | Interviews with OCIO Staff regarding ADAMS |
| 1.3.2.2.6 | Interviews with EHDStaff |
| 1.3.2.2.7 | Interviews with Staff Attorneys |
| 1.3.2.2.8 | Analyze results of interviews |
| 1.3.2.2.9 | End initial interviews |
| 1.3.2.3 | Subtask 1.2.3- Analyze POC Requirements & Brief NRC |
| 1.3.2.3.1 | Derive POC Baseline requirements |
| 1.3.2.3.2 | Validate POC Requirements and Initial User Interface |
| 1.3.2.4 | Hearing Management Software Survey |
| 1.3.2.4.1 | Define Evaluation Criteria |
| 1.3.2.4.2 | Survey of Federal Government Admin Courts Packages |
| 1.3.2.4.3 | Select best of breed GOTS |
| 1.3.2.4.4 | Initial POC Screens for Review |
| 1.3.2.4.4.1 | Create initial screens |
| 1.3.2.4.4.2 | Internal PEC review |
| 1.3.2.4.4.3 | Update initial screen before NRC review |
| 1.3.2.4.4.4 | Review Mockups with Judges |
| 1.3.2.4.4.5 | Review Mockups with ASLBP Staff |
| 1.3.2.4.4.6 | Review Mockups with OCIO Staff |

| *WBS Number* | *WBS Element* |
|---|---|
| 1.3.2.4.4.7 | Review Mockups with Staff Attorneys |
| 1.3.2.4.4.8 | Update screen design |
| 1.3.2.4.5 | Finalize POC Requirements |
| 1.3.2.4.5.1 | Update POC Requirements Matrix |
| 1.3.2.4.5.2 | Develop POC Requirements Briefing Slides |
| 1.3.2.4.5.3 | Brief NRC and solicit comments |
| 1.3.2.4.5.4 | Finalize POC Requirements Statement |
| 1.3.2.4.5.5 | Deliver POC Requirements Matrix |
| 1.3.2.4.5.6 | NRC Review of POC Requirements Matrix |
| 1.3.2.4.5.7 | POC Requirements Approved by NRC |
| 1.3.2.4.6 | Develop Security and Contingency Plans |
| 1.3.2.4.6.1 | Interview Security Team regarding Directive 12.5 Requirements |
| 1.3.2.4.6.2 | Interview NRC personnel to gather risk assessment information |
| 1.3.2.4.6.3 | Develop Risk Assessment Section |
| 1.3.2.4.6.4 | Develop Security & Risk Assessment Plans with POC focus |
| 1.3.2.4.6.5 | Deliver Security and Risk Assessment Plans for POC to NRC for Review |
| 1.3.2.4.6.6 | Receive NRC comments on Security & Risk Assessment Plans |
| 1.3.2.4.6.7 | Develop Contingency Plan with POC Focus |
| 1.3.2.4.6.8 | Deliver Contingency Plan for POC to NRC for Review |
| 1.3.2.4.6.9 | Receive NRC comments on Contingency Plan |
| 1.3.2.4.6.10 | Update Security Plan |
| 1.3.2.4.6.11 | Deliver Security & Risk Assessment Plans |
| 1.3.2.4.6.12 | Update Contingency Plan |
| 1.3.2.4.6.13 | Deliver Contingency Plan |
| 1.3.3 | POC Design |
| 1.3.3.1 | Subtask 1.2.4-Begin Design |
| 1.3.3.1.1 | Subtask 1.2.4.1 DDMS Database Data Modeling |
| 1.3.3.1.1.1 | Develop logical data model |
| 1.3.3.1.1.2 | Develop physical data model |
| 1.3.3.1.2 | Subtask 1.2.4.2 Multimedia Subsystem Design |
| 1.3.3.1.2.1 | Courtroom Video Capture Design |
| 1.3.3.1.2.2 | Transcript Capture Design |
| 1.3.3.1.2.3 | Merge Video with Transcript |
| 1.3.3.1.2.4 | Integrated Multimedia Search and Playback |
| 1.3.3.1.2.5 | Capture Ad Hoc Multimedia Exhibit |
| 1.3.3.1.2.6 | ELMO Image Capture |
| 1.3.3.1.2.7 | Digitizing Pad Capture |
| 1.3.3.1.2.8 | Develop Touch Screen Mockups |
| 1.3.3.1.2.9 | Brief/Demo to NRC |
| 1.3.3.1.2.10 | Provide Documentation Inputs |
| 1.3.3.1.3 | Subtask 1.2.4.3 Portal/Web Server Design |
| 1.3.3.1.3.1 | Identify Required Set of Gadgets |
| 1.3.3.1.3.2 | Attorney Search and Retrieval Gadget Set |
| 1.3.3.1.3.3 | Judge Search and Retrieval Gadget Set |
| 1.3.3.1.3.4 | Clerk Search/Retrieval/Metadata Capture Gadget Set |
| 1.3.3.1.3.5 | Collaboration Gadget Set |
| 1.3.3.1.3.6 | EHD Extraction/DDMS Update |
| 1.3.3.1.3.7 | DDMS Extraction/DPC Push |
| 1.3.3.1.3.8 | EHD Ad Hoc retrieval |
| 1.3.3.1.3.9 | Develop Main Browser Screen Mockups |

| *WBS Number* | *WBS Element* |
|---|---|
| 1.3.3.1.3.10 | Brief/Demo to NRC |
| 1.3.3.1.3.11 | Provide Documentation Inputs |
| 1.3.3.1.4 | Subtask 1.2.4.4 Hearing Management Design |
| 1.3.3.1.4.1 | Define mods required |
| 1.3.3.1.4.2 | Assess FullCourt functionality against GOTS pkg |
| 1.3.3.1.4.3 | Select best approach using previously defined evaluation criteria |
| 1.3.3.1.5 | Subtask 1.2.4.5 Create POC Requirements and Design Briefing Charts |
| 1.3.3.1.5.1 | Create POC Requirements and Design Briefing Charts |
| 1.3.3.1.5.2 | Deliver Briefing to NRC |
| 1.3.3.1.6 | Subtask 1.2.4.6 Refine Design and Develop POC Req & Design Document |
| 1.3.3.1.6.1 | Complete POC Design Specification |
| 1.3.3.1.6.2 | "Deliver POC Requirements and Design Document for NRC Review (incl LDD, PDD, TIP)" |
| 1.3.3.1.6.3 | NRC returns comments |
| 1.3.3.1.6.4 | POC Requirements and Design Document Updated |
| 1.3.3.1.7 | POC System Design Review |
| 1.3.4 | End Subtask 1.2 |
| 1.4 | Subtask 1.3 – Develop POC |
| 1.4.1 | Begin Subtask 1.3 |
| 1.4.2 | Subtask 1.3.1 Dev'l System Configuration/Setup |
| 1.4.2.1 | Setup Portal and Collaboration Server |
| 1.4.2.1.1 | Install Hardware |
| 1.4.2.1.2 | Configure Hardware |
| 1.4.2.1.3 | Verify Operation |
| 1.4.2.2 | Setup MultiMedia Capture |
| 1.4.2.2.1 | Install Hardware |
| 1.4.2.2.2 | Configure Hardware |
| 1.4.2.2.3 | Verify Operation |
| 1.4.3 | Subtask 1.3.2 – Multimedia Management Development (MediaEdge) |
| 1.4.3.1 | Courtroom Video Capture |
| 1.4.3.2 | Transcript Capture Design |
| 1.4.3.3 | Merge Video with Transcript |
| 1.4.3.4 | Capture Ad Hoc Multimedia Exhibit |
| 1.4.3.5 | Multimedia Subsystem Integration |
| 1.4.3.6 | Integrate into Portal |
| 1.4.3.7 | Develop Sample Data and Scenarios |
| 1.4.3.8 | Subsystem Test |
| 1.4.3.9 | Test Analysis and Retest |
| 1.4.3.10 | Document Test Results |
| 1.4.3.11 | Integrate into Complete System |
| 1.4.4 | Subtask 1.3.3 - Portal /Web Server Development (Media Edge) |
| 1.4.4.1 | EHD Extraction/DDMS Update |
| 1.4.4.2 | DDMS Extraction/ DPC Push |
| 1.4.4.3 | Attorney Search and Retrieval Gadget Set |
| 1.4.4.4 | Judge Search and Retrieval Gadget Set |
| 1.4.4.5 | Cl;erk Search/Retrieval/Metadata Capture Gadget Set |
| 1.4.4.6 | Collaboration Gadget Set |
| 1.4.4.7 | Remote User Retrieval |
| 1.4.4.8 | Portal Subsystem Integration |
| 1.4.4.9 | Develop Sample Data and Scenarios |

| *WBS Number* | *WBS Element* |
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| 1.4.4.10 | Subsystem Test |
| 1.4.4.11 | Test Analysis and Retest |
| 1.4.4.12 | Integrate Other Subsystems |
| 1.4.4.13 | Test Integration of each Subsystem |
| 1.4.4.14 | Document Test Results |
| 1.4.5 | Subtask 1.3.4 - Hearing Management Setup and Testing |
| 1.4.5.1 | Finalize Definition and Design of Mods |
| 1.4.5.2 | Implement Modifications |
| 1.4.5.3 | Integrate with Portal Subsystem |
| 1.4.5.4 | Perform Integration Testing |
| 1.4.6 | Subtask 1.3.5 - Internal POC Testing |
| 1.4.6.1 | POC Evaluation Test Plan |
| 1.4.6.1.1 | Define Test Scenarios to Evaluate POC |
| 1.4.6.1.2 | Develop POC Test Plan |
| 1.4.6.1.3 | Deliver POC Test Plan for NRC Review |
| 1.4.6.1.4 | NRC Returns Comments |
| 1.4.6.1.5 | Finalize POC Evaluation Test Plan |
| 1.4.6.1.6 | Deliver Final POC Evaluation Test Plan |
| 1.4.7 | Subtask 1.3.6 - POC System Configuration & Installation @ NRC |
| 1.4.7.1 | Work with ITID to Install POC System Components at NRC |
| 1.4.7.2 | Configure POC System |
| 1.4.7.3 | Verify POC System |
| 1.4.8 | Subtask 1.3.7 - On-site System Testing |
| 1.4.9 | Deliver Operating POC System at NRC Ready for Testing |
| 1.4.10 | End Subtask 1.3 |
| 1.5 | Subtask 1.4 - Production System Requirements/Design |
| 1.5.1 | Begin Subtask 1.4 |
| 1.5.2 | Subtask 1.4.1 Production System Requirements |
| 1.5.2.1 | Develop Interview Questions |
| 1.5.2.1.1 | Data Flow Architecture |
| 1.5.2.1.2 | Performance Requirements |
| 1.5.2.1.3 | Systems Availability Requirements |
| 1.5.2.2 | Follow-up Interviews of Select Personnel |
| 1.5.2.3 | Analyze results of interviews |
| 1.5.2.4 | Update Requirements Matrix to Reflect Production System Requirements |
| 1.5.3 | Subtask 1.4.2 Production System Design |
| 1.5.3.1 | Revise Architecture & Design to Reflect Production System |
| 1.5.3.1.1 | Logical System Configuration |
| 1.5.3.1.2 | Physical System Configuration |
| 1.5.3.1.3 | System Performance & Tuning |
| 1.5.3.1.4 | System Availability |
| 1.5.4 | Subtask 1.4.3 Deliver Production System Requirements and Design Document |
| 1.5.4.1 | Expand requirements matrix to full production requirements set |
| 1.5.4.2 | NRC review session of expanded production requirements |
| 1.5.4.3 | Refine production requirements based on NRC input |
| 1.5.4.4 | Update POC System Requirements and Design Document to Full Production System |
| 1.5.4.5 | Deliver Draft Production System Requirements and Design Document |
| 1.5.4.6 | NRC Review of Draft Production System Document |

| *WBS Number* | *WBS Element* |
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| 1.5.4.7 | Hold Design Review |
| 1.5.4.8 | Revise Draft Document based on Review |
| 1.5.4.9 | Deliver Final Production System Requirements and Design Document |
| 1.5.5 | Subtask 1.4.4- Security and Contingency Plans for Production system |
| 1.5.5.1 | Interview Security Team regarding Full System Requirements |
| 1.5.5.2 | Develop Security Plan with Production System focus |
| 1.5.5.3 | Deliver Security Plan for Production System to NRC for Review |
| 1.5.5.4 | Receive NRC comments on Security Plan |
| 1.5.5.5 | Develop Contingency Plan with Production System Focus |
| 1.5.5.6 | Deliver Contingency Plan to NRC for Review |
| 1.5.5.7 | Receive NRC comments on Contingency Plan |
| 1.5.5.8 | Update Security and Risk Assessment Plans |
| 1.5.5.9 | Update Contingency Plan |
| 1.5.6 | End Subtask 1.4 |
| 1.6 | Subtask 1.5 - POC Evaluation |
| 1.6.1 | Begin Subtask 1.5 |
| 1.6.2 | Train Users in preparation for evaluation testing |
| 1.6.3 | NRC executes Evaluation Tests according to Evaluation Test Plan |
| 1.6.4 | POC identified problems fixed |
| 1.6.5 | POC System Evaluation Completed |
| 1.6.6 | Develop Recommendation Revision for Implementation Report |
| 1.6.7 | Retest POC System |
| 1.6.8 | Deliver to NRC for Review |
| 1.6.9 | Receive NRC Comments |
| 1.6.10 | Update Recommendation Revision for Implementation Report |
| 1.6.11 | Deliver Finalized Recommendation Revision for Implementation Report (incl Software & System Test Results Report) |
| 1.6.12 | Develop the Software Engineering Notebook |
| 1.6.13 | Deliver the Software Engineering Notebook |
| 1.6.14 | End Subtask 1.5 |
| 1.7 | End Task 1 |